Visualizing and Predicting Heart Diseases with an Interactive Dash Board

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HEART DISEASE PREDICTION

Heart disease is perceived as the deadliest disease in the human life across the world. In particular, in this type of disease the heart is not capable in pushing the required quantity of blood to the remaining organs of the human body in order to accomplish the regular functionalities Some of the symptoms of heart disease include physical body weakness, improper breathing, swollen feet, etc. The techniques are essential to identify the complicated heart diseases which results in high risk in turn affect the human life. Presently, diagnosis and treatment process are highly challenging due to inadequacy of physicians and diagnostic apparatus that affect the treatment of heart patients .

Early diagnosis of heart disease is significant to minimize the heart related issues and to protect it from serious risks . The invasive techniques are implemented to diagnose heart diseases based on medical history, symptom analysis report by experts, and physical laboratory report. Moreover, it causes delay and imprecise diagnosis due to human intervention. It is time consuming, computationally intensive and expensive at the time of assessment . Heart disease can be predicted based on various symptoms such as age, gender, pulse rate etc. Data analysis in healthcare assists in predicting diseases, improving diagnosis, analyzing symptoms, providing appropriate medicines, improving the quality of care, minimizing cost, extending the life span and reduces the death rate of heart patients.

ECG (Electro Cardio Gram) helps in screening irregular heart beat and stroke with the embedded sensors by resting it on a chest in order to track the patient's heart beat. Heart disease prediction is being done with the detailed clinical data that could assist experts to make decision.

Human life is highly dependent on proper functioning of blood vessels in the heart. The improper blood circulation causes heart inactiveness, kidney failure, imbalanced condition of brain, and even immediate death also. Some of the risk factors that can cause heart diseases are obesity, smoking, diabetes, blood pressure, cholesterol, lack of physical activities and unhealthy diet.

In the case of cardiovascular disease, early detection is critical in saving patients' lives. It is also necessary to protect patients from such diseases. Many data analytics tools are used to assist healthcare providers with early diagnosis. In 2015, approximately 17.7 million people died as a result of cardiovascular disease worldwide. To address cardiac risk, accurate decision-making and optimal treatment are required. Another Canadian study used five machine learning models to analyze 1-month mortality in congestive heart failure patients admitted to the hospital. Intrahospital predictions for myocardial infarction patients have been studied in South Korea and China . On the other hand, it has been discovered that cardiovascular disease is the cause of one out of every four deaths in the United States. Cardiovascular disease affects approximately 92.1 million American adults. The success of machine learning techniques has aided medical experts' work . As a result, a cardiovascular risk prediction system must be highly accurate and specific.

With advancements in machine learning, the healthcare industry is likely to transform its clinical practice in the future. As a result, researchers and clinicians must comprehend the significance of machine learning techniques . Although risk prediction algorithms exist, most of them take into account only a subset of risk factors. The performance of risk prediction systems remains a challenge in the case of complex interactions . Given the dangers of coronary heart disease, the heart fails to pump the amount of blood required to keep the rest of the body functioning normally. Shortness of breath, weakness, swollen feet, fatigue, and other symptoms can occur . Many health data amounts are generated as the healthcare industry's lifestyle changes. The various symptoms and habits that contribute to cardiovascular disease are documented in health records. Before disease diagnosis, various tests are performed, including auscultation, blood pressure, cholesterol, ECG, and blood sugar. These tests aid in determining whether or not the patient requires medication.

The limitations of human expertise in healthcare can sometimes result in an incorrect diagnosis. In the currently suspended life scenario, the risk of cardiac arrest has increased. While patients suffering from chest pain avoid seeking medical attention for fear of acquiring a contagious disease, their health conditions deteriorate. Correct predictions are critical for diagnosis and treatment. Day by day, researchers continue to develop effective decision support systems. Diagnosis of heart disease remains a challenge. Prediction relies heavily on classification techniques. The primary objective of this research is to recommend a highly accurate cardiovascular disease prediction system based on machine learning techniques, for which the popular cardiovascular datasets are classified utilizing cutting-edge machine learning algorithms such as REP Tree, M5P Tree, Random Tree, Linear Regression, Naive Bayes, J48, and JRIP. Thus, selecting the right machine learning algorithm depends on the success of the selected classification algorithm in cases of cardiovascular disease.We can predict the heart disease ease and without more complex using Cognos Analytics.

COGNOS ANALYTICS

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- In welcome Portal we can Search for content in Team content, My content, or Recent lists; open reports, dashboards, stories and other items; upload files, check your notifications, set your preferences and home page, and review your schedules and subscriptions.

  - Delete, copy, move, edit or run entries such as reports.
  - Create report views for reports without opening the Reporting component.
  - Create shortcuts to reports, dashboards, stories, or data modules. Set access permissions.

- In reporting we can Create and edit a wide range of professional reports. Use templates or customize your reports with prompts, bursting, advanced charts and visualizations.

- In DashBoards and Stories we can View, monitor, and communicate data insights and analysis with dashboards or stories. You can assemble a view that contains visualizations such as graphs, charts, plots, tables, maps, or any other visual representation of data. Enrich dashboards and stories with web pages and other content.

- In Data Modeling Modelers and administrators we can create data modules and packages and make them available to users for use with reports, dashboards, and stories. You can use the IBM Cognos Analytics web modeling tool to quickly create data modules from various sources, such as data servers, uploaded files, and previously saved data modules.

- In Manage and Administrator Create and manage accounts (users, groups, and roles), schedules, or data server connections. Perform configuration tasks, and customize the product experience and user interface.
Changes that you make in either the manage interface or the administration control effect both interfaces.